

What is claimed is:

- 1 1. A redundant power distribution system having a plurality
2 of distribution lines comprising:
 - 3 a plurality of regulators;
 - 4 a plurality of isolation transformers coupled to said plurality of
5 regulators and having a plurality of isolation boundaries; and
 - 6 at least one R(M/N) device circuit coupled to said plurality of
7 isolation transformers where M of the N elements are required so that the
8 system operates properly;
 - 9 said plurality of regulators and isolation transformers having a
10 non-feedback looped configuration across said plurality of isolation boundaries.
- 1 2. A system as in claim 1 wherein said at least one R(M/N)
2 device circuit comprises a plurality of distribution switches.
- 1 3. A system as in claim 1 wherein said plurality of
2 regulators are primary regulators.
- 1 4. A system as in claim 3 wherein said at least one R(M/N)
2 device circuit comprises a plurality of secondary regulators.
- 1 5. A redundant regulator circuit for a redundant power
2 distribution system comprising a plurality of regulators having a plurality of
3 source inputs and a common output.
- 1 6. A circuit as in claim 5 wherein said plurality of regulators
2 comprise a plurality of output adjustments.
- 1 7. A circuit as in claim 6 wherein said plurality of output
2 adjustments adjust voltage on said common output.

1 8. A circuit as in claim 5 wherein said plurality of regulators
2 comprise:

3 a first regulator having a first input and a first output; and
4 a second regulator having a second input and a second output
5 that is coupled to said first output.

1 9. A redundant power distribution system comprising:
2 a plurality of primary regulators;
3 a plurality of isolation transformers electrically coupled to said
4 plurality of primary regulators;
5 at least one redundant regulator circuit electrically coupled to
6 said plurality of isolation transformers; and
7 a plurality of secondary regulators.

1 10. A system as in claim 9 wherein said plurality of primary
2 regulators comprises at least one controller comparing a primary voltage with a
3 reference voltage and generating an error signal, said controller adjusting
4 voltage output of said plurality of isolation transformers in response to said
5 error signal.

1 11. A system as in claim 9 wherein said at least one
2 redundant regulator circuit comprises at least a portion of said plurality of
3 secondary regulators.

1 12. A system as in claim 9 wherein said is a single integral
2 unit.

1 13. A system as in claim 9 wherein said plurality of
2 secondary regulators have a common output.

1 14. A system as in claim 9 wherein said at least one
2 redundant regulator circuit is electrically coupled to each of said plurality of
3 isolation transformers.

1 15. A system as in claim 9 wherein said at least one
2 redundant regulator circuit comprises:

3 a first redundant regulator circuit coupled to a first isolation
4 transformer and to a second isolation transformer; and

5 a second redundant regulator circuit coupled to said first
6 isolation transformer and to said second isolation transformer.

1 16. A system as in claim 15 wherein said at least one
2 redundant regulator circuit comprises a third redundant regulator circuit coupled
3 to said first isolation transformer and to said second isolation transformer.

1 17. A system as in claim 9 further comprising at least one
2 distribution switch electrically coupled to said plurality of primary regulators.

1 18. A system as in claim 17 wherein said at least one
2 distribution switch comprises:

3 a first distribution switch electrically coupled to a first primary
4 regulator of said plurality of primary regulators; and

5 a second distribution switch electrically coupled to a second
6 primary regulator of said plurality of primary regulators.

1 19. A redundant power distribution system comprising:
2 a plurality of power sources;
3 a plurality of converters electrically coupled to said power
4 sources, having a plurality of outputs, and comprising;

5 at least one regulator; and
6 at least one isolation transformer; and
7 at least one output distribution switch electrically coupled to said
8 plurality of outputs.

1 20. A system as in claim 19 wherein said at least one output
2 distribution switch comprises:

3 a first output distribution switch electrically coupled to a first
4 converter and to a second converter; and

5 a second output distribution switch electrically coupled to said
6 first converter and to said second converter.

1 21. A system as in claim 20 wherein said at least one output
2 distribution switch comprises a third output distribution switch electrically
3 coupled to said first converter and to said second converter.

1 22. A system as in claim 19 further comprising at least one
2 input distribution switch electrically coupled to said plurality of power sources
3 and said plurality of converters.

1 23. A system as in claim 22 wherein said at least one input
2 distribution switch comprises:

3 a first input distribution switch electrically coupled to a first
4 source and to a second source; and

5 a second input distribution switch electrically coupled to said
6 first source and to said second source.

1 24. A system as in claim 23 wherein said first input
2 distribution switch is coupled to a first converter and said second input
3 distribution switch is coupled to a second converter.

1 25. A system as in claim 22 wherein said at least one input
2 distribution switch when in an ON state supplies power from said plurality of
3 power sources to a converter.

1 26. A method of redundantly supplying and distributing
2 power from a plurality of power sources to a plurality of loads comprising:
3 coarsely regulating power received from a plurality of power
4 sources;
5 isolating said coarsely regulating power from power received by
6 at least one redundant regulator circuit; and
7 finely regulating said power received by at least one redundant
8 regulator circuit to generate a plurality of redundant power outputs.

1 27. A method as in claim 26 further comprising combining
2 said plurality of redundant power outputs.